

NPP

*National Polar-orbiting Operational
Environmental Satellite System
Preparatory Project*

National Aeronautics and
Space Administration



NPP's Preparatory Project (PP) will begin its 5-year mission aboard a Delta II-7920-10 at Vandenberg Air Force Base in October 2011. The National Polar-orbiting Operational Environmental Satellite System (NPOESS) is the next generation of low earth orbiting environmental satellites. The NPOESS will circle the Earth approximately once every 100 minutes. During these rotations, the NPOESS will perform a variety of functions such as measuring atmospheric temperature and moisture sounding, cloud imaging, sea surface temperature measurements, as well as measurements of ocean, land and ocean biological productivity, aerosol concentrations, and climate system radiation balance.

The data collected from NPP will be distributed to meteorologists at NOAA and the U.S. Department of Defense, as well as to climate scientists around the globe. The volume of data will allow scientists and forecasters to monitor and predict weather patterns with greater speed and accuracy. The data gathered by the NPP will also be used to develop the operational part of climate and primary productivity data collection. Climate data is used to monitor and predict weather patterns, as well as to study the effects of climate change on the environment and on human health.

LAUNCH VEHICLE
Delta II-7920-10C

LAUNCH LOCATION
*Vandenberg
Air Force Base, CA*

LAUNCH DATE
2011

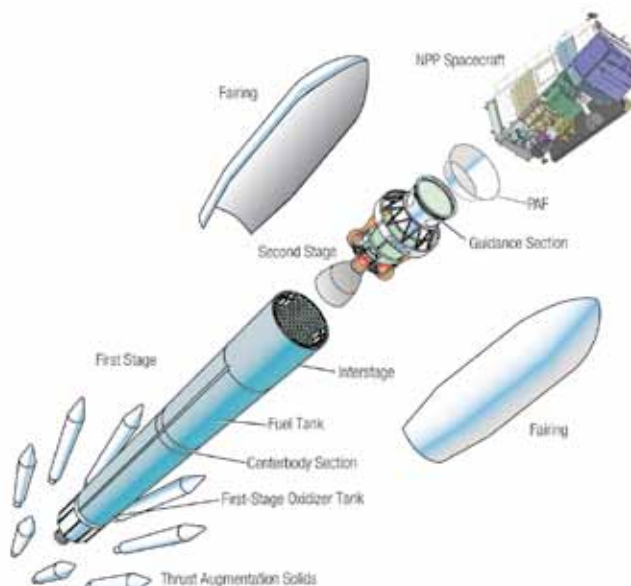
National Polar-orbiting Operational Environmental Satellite System Preparatory Project (NPP)

United Launch Alliance will use a Delta II 7920-10C to launch the NPOESS Preparatory Project for NASA. The 7920-10C two-stage launch vehicle has four major assemblies: the first stage, including main engine and nine strap-on solid propellant rocket motors; interstage; second stage and 10-foot diameter composite payload fairing. The Delta II is approximately 126 feet tall and eight feet wide.

The NPP space segment is comprised of six elements. The spacecraft, the five instrument/sensor payloads, and the associated ground support equipment and simulators. The five instruments manifested for flight on the NPP spacecraft trace their heritage to instruments on NASA's Terra, Aqua and Aura missions, on NOAA's Polar Operational Environmental Satellite (POES) spacecraft, and on DOD's Defense Meteorological Satellite Program (DMSP).

The spacecraft for NPP will directly transmit stored mission sensor data to a receiving station in Svalbard, Norway, and will also provide continuous direct broad-cast of real-time sensor data. The mission data will be routed on communications networks from Svalbard to the continental United States.

Delta II 7920 Launch Vehicle



Drawing Courtesy of: United Launch Alliance

Advanced Technology Microwave Sounder (ATMS)-22-channel passive microwave radiometer, to create global models of temperature and moisture profiles that meteorologists will enter into weather forecasting models.

Cross-track Infrared Sounder (CrIS)-Michelson interferometer, will monitor characteristics of the atmosphere, such as moisture and pressure that will be used to produce improvements in both short-and-long term weather forecasting.

Ozone Mapping and Profiler Suite (OMPS)-OMPS, built by Ball Aerospace, incorporates an advanced nadir-viewing sensor and a highly innovative limb-viewing sensor. OMPS instrument continues Ball's history of building ozone-measuring instruments and will continue the long-term continuous data record of ozone measurements from space.

Visible Infrared Imaging Radiometer Suite (VIIRS)-22-band radiometer similar to the MODIS instrument, will collect visible and infrared views of Earth's dynamic surface processes, such as wildfires, land changes, and ice movement. VIIRS will also measure atmospheric and oceanic properties, including clouds and sea surface temperature.

Clouds and the Earth's Radiant Energy System (CERES)-3-channel radiometer measuring reflected solar radiation, emitted terrestrial radiation, and total radiation, will monitor the natural and anthropogenic effects on the Earth's total thermal radiation budget.



NPP Spacecraft with Instruments

*Drawing Courtesy of:
Goddard Space Flight Center*

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John F. Kennedy Space Center
Kennedy Space Center, FL 32899

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